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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re: Pat.Appn. Ser. No. 10/037,251 : Art Unit 2854

Filed 1/4/02 : Exr. L.J. Evanisko

Inventors Hougham et al. : Atty. Dkt. No. YOR920010020US1

For: MULTILAYER ARCHITECTURE FOR MICROCONTACT PRINTING STAMPS

REPLACEMENT BRIEF ON APPEAL IN COMPLIANCE WITH 37CFR41.37
IN RESPONSE TO 10/25/04 NOTICE OF NON-COMPLIANT APPEAL BRIEF
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In the appeal of the above identified application, the required items as specified in 37CFR41.37
on pages 50006 and 50007 of the Federal Register, Vol 69, No.155, as paragraphs (c)(1)(i)
through (c)(1)(x) in consecutive order are provided as follows.

(i) Real party in interest

The entire right title and interest in the above identified application is the property of
International Business Machines Corporation of Armonk, N.Y.

(ii) Related appeals and Interferences

There are no related appeals and interferences.

(iii) Status of claims

Claims 1 - 10, here appealed, are all the elected claims in the application. They stand finally
rejected in a 4/22/04 final rejection.

The status of each claim and the text thereof of each, as amended, where amended, is as follows.

Claim 1 (As filed, not amended)

1 1. In microcontact printing wherein an electronic circuitry pattern on the surface of an
2 elastomeric stamp member is operable in a transfer of a further processing responsive
3 material, to a surface of a substrate,
4 the improvement comprising:
5 said elastomeric stamp member having a surface region of a material imparting to said
6 stamp member at least one of the properties of adhesion and wettability enhancement
7 of the material of said circuitry pattern to said surface region, and,
8 said elastomeric stamp member further having at least one subsurface region, each said
9 subsurface region being of a material imparting a particular physical property to said
10 stamp member.

Claim 2 (As filed, not amended)

1 2. The microcontact improvement of claim 1 wherein said at least one subsurface
2 region, is a single region that imparts the bulk property of stiffness to said stamp
3 member.

Claim 3 (As filed, not amended)

1 3. The microcontact improvement of claim 1 wherein said at least one subsurface
2 region, is a single region that imparts the bulk property of wettability enhancement to said
3 stamp member.

Claim 4 (As filed, not amended)

- 1 4. The microcontact printing improvement of claim 2 wherein another region of said at
2 at least one subsurface regions, imparts the property of porosity, and is positioned between
3 said surface region and said stiffness bulk property imparting region.

Claim 5 (Amended as follows)

Claim 5 change the dependency from claim 2 to claim 3 by

in line 1 erase the cross hatched ~~//2//~~ and in lieu thereof insert the underlined 3 . thereby
producing the following text.

- 1 5. The microcontact printing improvement of claim 3 wherein another region of said at
2 at least one subsurface regions, imports the property of porosity, and is positioned between
3 said surface region and said wettability enhancement bulk property imparting region.

Claim 6 (Amended as follows)

Claim 6 change Dupont to Dow Corning by

in line 2 erase the cross hatched ~~DUPONT~~ and in lieu thereof insert the underlined Dow Corning ,
and in line 3 erase the cross hatched ~~DUPONT~~ and insert the underlined Dow Corning , thereby
producing the following text.

- 1 6 The microcontact printing improvement of claim 2 wherein said surface region is of the
2 material known as Dow Corning Sylgard siloxane 184 and said subsurface region is of
3 the material known as Dow Corning Sylgard siloxane 186.

Claim 7 (As filed, not amended)

1 7. A microcontact printing stamp,
2 comprising in combination:
3 a body having at least a layer imparting a bulk stiffness and flatness physical property on
4 which there is a stamping pattern supporting surface,
5 a stamping pattern layer positioned on said pattern supporting surface of said body,
6 said stamping pattern layer including a negative relief stamping pattern in which the
7 spaces between the features of said stamping pattern are the positive relief embossed
8 portions of the final printing stamp,
9 said stamping pattern layer further being of an electronic circuitry processable material
10 in which at least one of the physical properties of adhesion enhancement and
11 wettability enhancement are imparted.

Claim 8 (As filed, not amended)

1 8. The microcontact printing stamp member of claim 7 including a further layer
2 of a specific physical property imparting material positioned between said stamping
3 pattern layer and said layer of bulk stiffness and wettability enhancement physical
4 property imparting material.

Claim 9 (As filed, not amended)

1 9. The microcontact printing stamp member of claim 8 wherein said physical property
2 imparted by said layer of a specific physical property imparting material is the physical
3 property of porosity.

Claim 10 (Amended as follows)

In line 3 erase the cross hatched ~~////////~~ and in lieu thereof insert the underlined DowCorning,
and in line 4 erase the cross hatched ~~////////~~ and in lieu thereof insert the underlined
DowCorning.

producing the following text.

- 1 10. The microcontact printing stamp of claim 7 wherein said layer of a bulk stiffness and
- 2 wettability enhancement physical property imparting material, is the material known as
- 3 Dow Corning Sylgard siloxane 186 and the material of said stamping pattern layer is of
- 4 the material known as Dow Corning Sylgard siloxane 184.

A clean copy of all the claims under appeal is provided in (viii) Claims Appendix

(iv) Status of Amendments

All amendments are considered to have been entered.

(v) Summary of claimed subject matter

In the fabrication of very finely patterned resilient stamping members that are to be used for the printing of seed layers of metal in the plating of patterns for electronic circuitry, situations are being encountered where being able to use multiple material properties that are not usually found in a single material, would be advantageous. For example, the surface of the stamp would have wettability properties optimized so that the liquid used as the seed material in the plating more easily wets the substrate on which the plating is to take place, the stamp must be structurally sufficiently durable with appropriate stiffness so as to maintain the integrity of the pattern being plated, and the ability to provide such properties as porosity in a specific location is useful for providing a capability to position a local fluid in the structure. Frequently in the art a situation may arise where, in a material, the optimization of one property operates to compromise another. In accordance with this invention, such material property considerations can be overcome by providing for example a multiple layer stamp with each layer providing a different desired individual property. There can be a very thin region of the stamp structure that carries the raised relief patterned features arranged in one material while the bulk or support of the stamp structure could be made of a second material having other properties.

In the following, as part of the summary of the invention, the language of each of the two independent claims 1 and 7 is correlated with the locations in the specification and drawings. A clean copy of the claims as appealed is located in (viii) Claims Appendix and a copy of the drawings is located in (ix) Evidence Appendix Section a (Drawings).

1	1. In microcontact printing wherein	Drawing	Specification
2	an electronic circuitry pattern on the surface of an	Fig. 1 at A	Page 4 line 7
3	elastomeric stamp member is operable in a transfer	pattern 10,	
4	of a further processing responsive		
5	material, to a surface of a substrate,	surface 11, substrate 12	
6	the improvement comprising:		
7	said elastomeric stamp member having a surface region	layer 13	page 5
8	of a material imparting to said		
9	stamp member at least one of the properties of		lines 1 - 11
10	adhesion and wettability enhancement		
11	of the material of said circuitry pattern		page 6 lines 1 - 15
12	to said surface region, and,		
13	said elastomeric stamp member further having		
14	at least one subsurface region, each said	elements 21, 23 and 24	
15	subsurface region being of a material imparting		
16	a particular physical property to said		
17	stamp member.		

1	7. A microcontact printing stamp,	Fig. 2	Page 7 line 7 - page 8 line 15
2	comprising in combination:		
3	a body having at least a layer imparting		substrate 12 surface 11
4	a bulk stiffness and flatness physical property on		
5	which there is a stamping pattern supporting surface,		

5 a stamping pattern layer positioned
on said pattern supporting surface of said body

pattern 10 page 7 lines 7 - 15

6 said stamping pattern layer including
a negative relief stamping pattern in which the

7 spaces between the features of said
stamping pattern are the positive relief embossed

8 portions of the final printing stamp,

9 said stamping pattern layer further being
of an electronic circuitry processable material

10 in which at least one of the physical
properties of adhesion enhancement and

page 7 line 15 - page 8 line 6

11 wettability enhancement are imparted.

(vi) Grounds of rejection to be reviewed on appeal

Ground 1. for review. A position is being taken in the 4/22/04 final rejection, (page 3 enumerated topic 6) that in six separate 35USC112 rejections involving all of the claims, the present claims are deemed indefinite for failing to particularly point out and distinctly claim the subject matter.

Ground 2. for review. A position is being taken in the 4/22/04 final rejection, (page 6 enumerated topic 9) that appellants claims 1-3 and 7 are rejected under 35USC102 as anticipated by a Maracus et al (US 5,937,758) reference of record.

Ground 3. for review. A position is being taken in the 4/22/04 final rejection, (page 9 enumerated topic 12) that appellants claims 6 and 10 are rejected under 35 USC 103 as unpatentable involving unobviousness over the Maracus et al (US 5,937,758) reference of record.

Ground 4. for review. A position is being taken in the 4/22/04 final rejection, (page 9 enumerated topic 13) that appellants claims 1 - 10 are rejected under 35 USC 103 as unpatentable over a Fugimora (US 4,306,498) reference of record and the pramble of appellants claim 1 as admitted prior art.

Ground 5 for review. A position is being taken in the 10/25/04 notification of non-compliance in the continuation sheet next to last item that applicants appear to be stating that each of claims 1 - 10 is separately patentable but each has not been separately argued.

Ground 6 for review. A position is being taken in the 4/22/04 final rejection, (page 3 enumerated topic 4) that the Dow Corning Sylgard material is a trademark, should be capitalized and accompanied by generic terminology.

(vii) Argument

Argument with respect to ground 1. for review in this appeal.

Appellants consider the invention to be a tool structure or stamp that is useable in the established field or art of microcontact printing or ultrafine resilient stamping. The art is also known as soft lithography. In this art the stamp tool has some resiliency and is used in precision transfer of monolayer quantities of etchant resistant or seed catalysis materials.

There is ample technical literature in the art. The Kumer and Hilber technical articles and the Maracus, Fugimura and Bruno patents are of record. The general state of the art is that a layer of the stamp tool can impart a desired property.

This invention may be considered to be advancing the advantages of having superimposed layers in a stamp.

In the 35USC112 rejections it is the position that property terminology must be introduced into the claims for definiteness.

In this art porosity is a property usable to retain a material being transferred. Wettability is a property usable to get the transfer material to stick to the stamp or stamped location in an available time.

It is appellants position that the claims are simple structure that can convey the concept and it can be practiced through the structural terminology used in the claims as they are.

Argument with respect to ground 2. for review in this appeal.

In Ground 2. a position is being taken that claims 1-3 and 7 are anticipated under 35USC102 by Maracus et al (US 5,937,758). It is appellants' position that the application of the elements of the reference to the claim requirements is the road map type of approach that is devoid of any indication how one skilled in the art would be led to the other elements. The criteria for anticipation are very precise and must lead up to the invention, all elements must be present and used in the same way. It is submitted that Maracus does not lead up to the invention and isn't likely to. The Maracus purpose is to be able to use the self assembled monolayer

(SAMS) technology that results in a stamp with a single layer. In contrast applicants may be thought of as advancing multilayer structures and distinguishes over the reference for that reason.

Argument with respect to ground 3. for review in this appeal.

Appellants claims 6 and 10 stand rejected under 35 USC 103 as being unpatentable involving obviousness over Maracus(US 5,937,758).

This is based on an unsupported assumption that the Maracus reference would meet all limitations and then a further assumption that selection of a particular set of materials would be an obvious routine operation. Not without something to guide the person doing it. Nothing more than the bald assertion is advanced in support so that the rejection is unsupported..

Argument with respect to ground 4. for review in this appeal.

Appellants claims 1 - 10 stand rejected under 35 USC 103 as being unpatentable over the Fugimora (US 4,306,498) reference of record and the preamble of appellants claim 1 as admitted prior art.

There is a missing aspect to the needed linkage of the information in Fugimora directed to a non woven backing holding ink and the listed elements in the preamble of the claim. How does one skilled in the art arrive at the invention other than through some type of hindsight. It is considered that the assumptions are unsupported and could not lead one to the invention.

Argument with respect to ground 5. for review in this appeal.

A position is being taken in the 10/25/04 notification of non-compliance in the continuation sheet next to last item that applicants appear to be stating that

each of claims 1 - 10 is separately patentable but each has not been separately argued.

In argument:

For each independent claim, each is considered to be patentable as being another way of setting forth the invention in the multiple permissible ways available to an applicant for the invention; and, where, as here, each dependent claim is then patentable as adding an additional limitation to a considered to be patentable independent claim. This is a standard situation.

Argument with respect to ground 6. for review in this appeal.

In Ground 6 a position is being taken that the Dow Corning Sylgard material is a trademark, and should be capitalized and accompanied by generic terminology.

In argument: the situation is more complex. First, the desired material for the invention is the generic chemical siloxane (Spec. P5). Commercially available siloxane is Dow Corning Sylgard 184 & 186. Dow Corning Sylgard is well known in this art as indicated in two of the applied references. In the Kumer reference page 2003 in connection with Fig.2 the material appears to be referred to as “(Dow Corning Silicone Elastomer 184)” and in the Bruno Et al reference Col 1 Para {0003} the material appears to be referred to as “-- Sylgard 184 manufactured by Dow Corning Corp,--” In view of the fact that the preferred material is siloxane and the Sylgard 184 and 186 are commercially available products well known in the art the way stated appeared to be adequate.

(viii) Claims appendix

A clean copy of the claims on appeal is provided.

(ix) Evidence appendix


It is unclear from the record whether the replacement clearer informal drawings are the ones acknowledged. A clean copy of the replacement drawings are provided herewith in the evidence appendix.

(x) Related Proceedings appendix

There being no related proceedings, in this appendix there will be no content..

In summary, invention is a simple straightforward structural step in the art that distinguishes over the art by the superimposed layers multiple and the inventors are justly entitled to the claims.

Respectfully submitted



Alvin J. Riddles

Reg. 17862



1. In microcontact printing wherein an electronic circuitry pattern on the surface of an
2 elastomeric stamp member is operable in a transfer of a further processing responsive
3 material, to a surface of a substrate,
4 the improvement comprising:
5 said elastomeric stamp member having a surface region of a material imparting to said
6 stamp member at least one of the properties of adhesion and wettability enhancement
7 of the material of said circuitry pattern to said surface region, and,
8 said elastomeric stamp member further having at least one subsurface region, each said
9 subsurface region being of a material imparting a particular physical property to said
10 stamp member.
- 1 2. The microcontact improvement of claim 1 wherein said at least one subsurface
2 region, is a single region that imparts the bulk property of stiffness to said stamp
3 member.
- 1 3. The microcontact improvement of claim 1 wherein said at least one subsurface
2 region, is a single region that imparts the bulk property of wettability enhancement to said
3 stamp member.

1 4. The microcontact printing improvement of claim 2 wherein another region of said at
2 least one subsurface regions, imparts the property of porosity, and is positioned between
3 said surface region and said stiffness bulk property imparting region.

1 5. The microcontact printing improvement of claim 3 wherein another region of said at
2 least one subsurface regions, imparts the property of porosity, and is positioned between
3 said surface region and said wettability enhancement bulk property imparting region.

1 6 The microcontact printing improvement of claim 2 wherein said surface region is of the
2 material known as Dow Corning Sylgard siloxane 184 and said subsurface region is of
3 the material known as Dow Corning Sylgard siloxane 186.

1 7. A microcontact printing stamp,
2 comprising in combination :
3 a body having at least a layer imparting a bulk stiffness and flatness physical property on
4 which there is a stamping pattern supporting surface,
5 a stamping pattern layer positioned on said pattern supporting surface of said body,
6 said stamping pattern layer including a negative relief stamping pattern in which the
7 spaces between the features of said stamping pattern are the positive relief embossed
8 portions of the final printing stamp,
9 said stamping pattern layer further being of an electronic circuitry processable material
10 in which at least one of the physical properties of adhesion enhancement and
11 wettability enhancement are imparted.

1 8. The microcontact printing stamp member of claim 7 including a further layer
2 of a specific physical property imparting material positioned between said stamping
3 pattern layer and said layer of bulk stiffness and wettability enhancement physical
4 property imparting material.

1 9. The microcontact printing stamp member of claim 8 wherein said physical property
2 imparted by said layer of a specific physical property imparting material is the physical
3 property of porosity.

1 10. The microcontact printing stamp of claim 7 wherein said layer of a bulk stiffness and
2 wettability enhancement physical property imparting material, is the material known as
3 Dow Corning Sylgard siloxane 186 and the material of said stamping pattern layer is of
4 the material known as Dow Corning Sylgard siloxane 184.



FIG.1

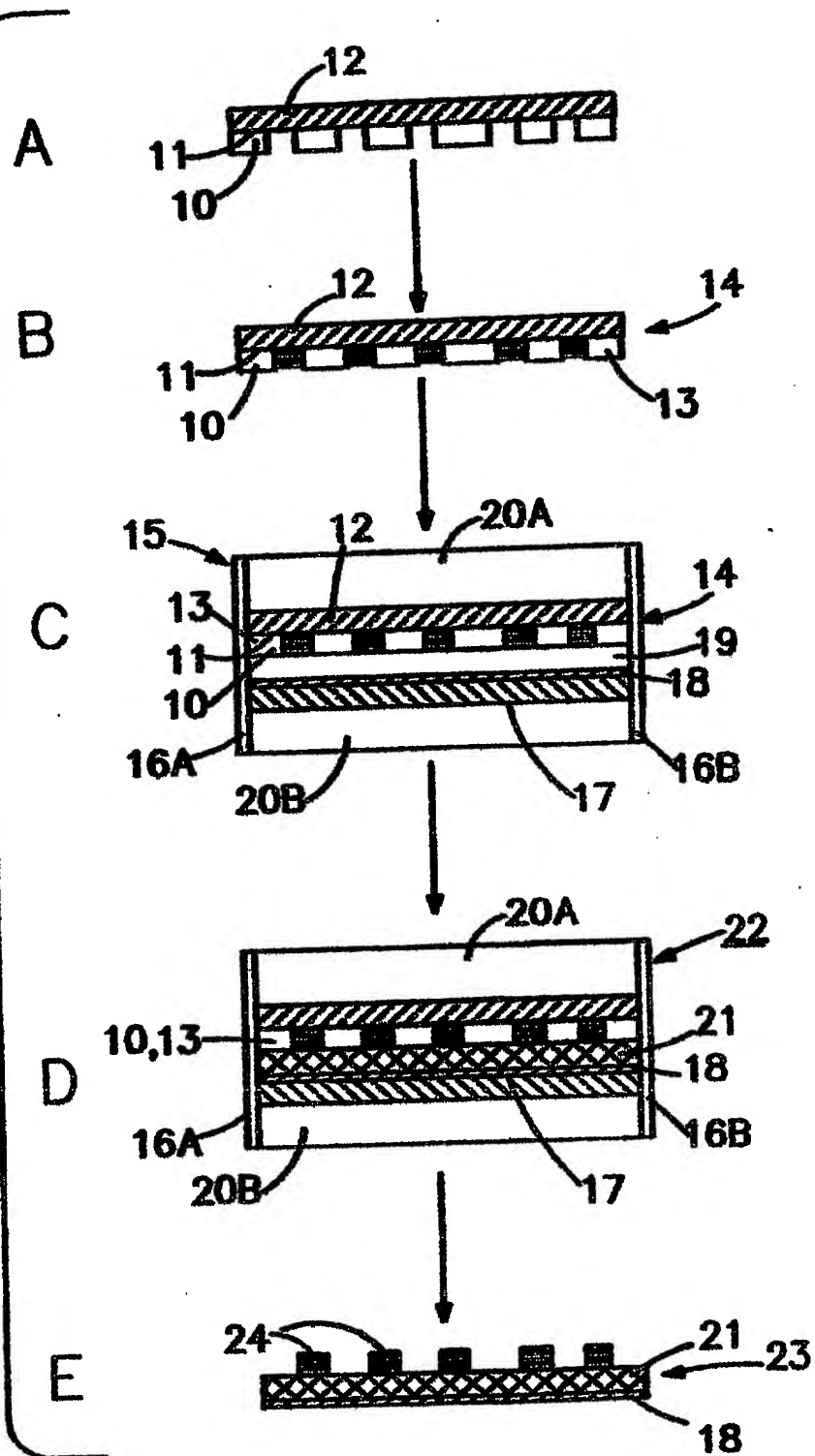




FIG.2

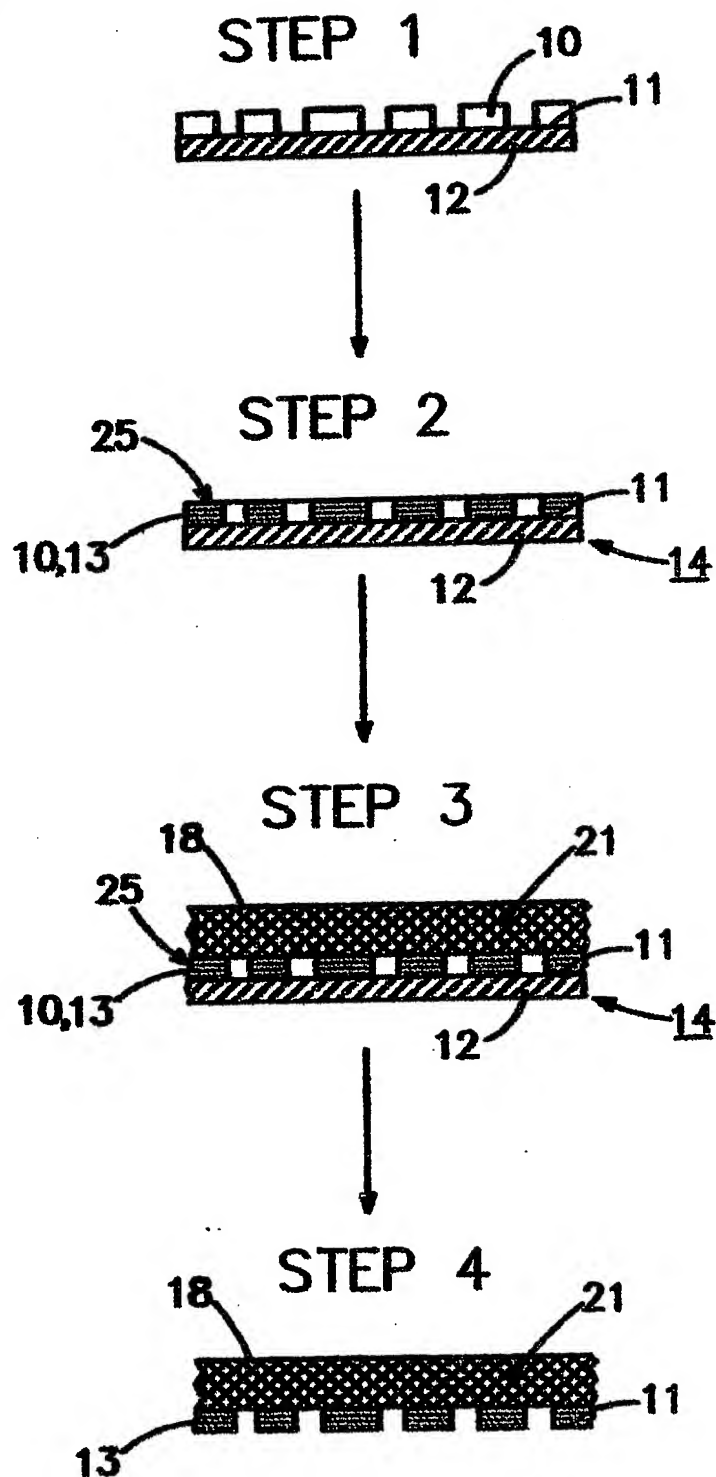




FIG.3

